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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,951	09/20/2001	Masayuki Shimizu	Q66266	9974

7590

08/14/2002

SUGHRUE, MION, ZINN, MACPEAK & SEAS
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037

EXAMINER

PHAM, HAI CHI

ART UNIT

PAPER NUMBER

2861

DATE MAILED: 08/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

09/955,951

Applicant(s)

SHIMIZU ET AL.

Examiner

Hai C Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondenc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 7 and 9-17 is/are rejected.
- 7) ☒ Claim(s) 5 and 8 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 6, 7, 9, 10, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda (JP 4-284484) in view of Chosa et al. (U.S. 6,219,074 B1).

Maeda discloses an optical printing head comprising a plurality of light emitting elements (LEDs L1-Ln) mounted on a substrate (12) and arranged along a perpendicular direction to the conveying direction of said photosensitive material (Fig. 4), a thin partitioning device (10) mounted on said substrate, for partitioning said light emitting elements from each other, to prevent interference between rays from adjacent ones of said light emitting elements, a diffusion device (15) for diffusing rays from said light emitting elements, to equalize luminance of rays from each light emitting element, each of said light emitting elements being assigned to record a dot at a time when

driven in synchronism with the conveying movement of said photosensitive material, thereby to print said latent image line by line.

However, Maeda does not explicitly disclose the converging lens system for projecting rays from said light emitting elements onto said photosensitive material, the mask plate, the coating of the light-emitting elements, the plural rows of light-emitting elements emitting rays of different colors.

Regardless, it is well known in the printing art that such converging lens system is necessary to a printing system for focusing the light beam onto the surface of the photosensitive material to form a sharp image. Chosa et al., for example, disclose an image forming apparatus including light-emitting elements (4) mounted on a substrate or circuit board (1), thick partitioning side walls (12, Fig. 4B) to shield the light from each ones of the light-emitting elements as well as reflecting the light emitted from the light-emitting element back to the aperture (7p), the plate (7) having light-passing areas (7p) provided in the light-emitting direction of the light-emitting elements, and the transparent substrate (27) using as a lens system for condensing the light to the recording paper (3). The conventional lens system (8, Fig. 27) can also be used to condense the light. Chosa et al. further discloses a plurality of rows of light-emitting elements (Fig. 1) being mounted on the substrate, and emitting rays of different colors (RGB), and the spaces between the partitioning walls being filled up with a transparent coating material (transparent resin sealant 6, Fig. 2) to coat the light emitting elements.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the lens system, the mask plate, as well as

Art Unit: 2861

the coating material as taught by Yano in the device of Maeda. Doing so would decrease the required quantity of light illuminating the photosensitive material as well as protect the light-emitting elements.

4. Claim 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda in view of Chosa et al., as applied to claims 1, 10 above, and further in view of Oku (JP 4-284484).

Maeda in view of Chosa et al. discloses all the basic limitations of the claimed invention except for the arrangement of the rows of the light emitting elements.

However, Oku discloses an electrophotographic copying machine comprising a plurality of rows of light-emitting elements, each of the light emitting elements being shielded from the others by partitioning walls (51b), each row being spaced from each other by a distance that is equal to a length of each light emitting element in the perpendicular direction to the conveying direction of the photosensitive material or drum (110), and the light emitting elements of one row are staggered from those of adjacent rows in said perpendicular direction by an amount approximately equal to said distance (Figs. 1b, 4).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Maeda, as modified by Chosa et al., with the aforementioned teaching of Oku for the purpose of providing a high resolution of printed dots.

5. Claims 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maeda in view of Chosa et al. and Murano (U.S. 5,444,520).

Maeda in view of Chosa et al. discloses all the basic limitations of the claimed invention except for the plurality of printing heads, and the dichroic mirrors.

However, Murano discloses an image forming devices having a plurality of printing heads A, B, C, D (Fig. 15) whose emitted light beams are synthesized by the dichroic mirrors (148, 150, 82) to form parallel beams on the same optical axis.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Maeda, as modified by Chosa et al., with the aforementioned teaching of Murano for the purpose of recording color image on the photosensitive material.

Allowable Subject Matter

6. Claims 5 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: none of the prior arts made of record discloses the claimed features related to an optical printing head including a plurality of light-emitting elements, each ones being shielded from the others by a partitioning device, a diffusion device for diffusing rays from the light-emitting elements to equalize luminance of rays from each light-emitting element, and a convergent lens system. The partitioning device has plates, the spaces

between which are filled up with a transparent coating material. The diffusion device further comprises light diffusing particles mixed into the coating material. It is the combination of the above limitations, which is not taught or suggested by the prior arts of record, that makes the claims allowable.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John S. Hilten can be reached on (703) 308-0719. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM
PRIMARY EXAMINER

August 10, 2002